

CLAIMS

What is claimed is:

1. A monitoring system comprising:
a central processing server, wherein said central processing server performs one or more of:
issues measurement requests for measuring conditions of a monitored area; and
processes data received in response to said measurement requests;
a plurality of intermediate monitor sites communicably connected to said central processing server for relaying said measurement requests; and
a plurality of smart probes in communication with said plurality of intermediate monitor sites for measuring said data in response to said measurement request, wherein each one of said plurality of smart probes determines a set of conditions for said each one prior to said measuring.
2. The monitoring system of claim 1 wherein said set of conditions comprises one or more of:
availability of said each one to take said measurement request;
capability of said each one for taking said measurement request; and
a configuration of said each one needed to take said measurement request.
3. The monitoring system of claim 1 wherein said central processing server further issues task requests for influencing a condition of said monitored area and wherein said plurality of smart probes perform tasks in response to said task request relayed from said plurality of intermediate monitor sites.
4. The monitoring system of claim 3 wherein said set of conditions comprises one or more of:
availability of said each one to perform said task request;
capability of said each one for performing said task request; and
a configuration of said each one needed to perform said task request.
5. The monitoring system of claim 1 wherein said plurality of smart probes:
generates a random participation number for participating in one or more of said

measurement request;

compares said random participation number to a participation threshold; and determines participation in said measurement request according to said comparison.

6. The monitoring system of claim 5 wherein said participation threshold is weighted according to one or more of:

a number of participating ones of said plurality of smart probes; and an importance of said measurement request.

7. The monitoring system of claim 1 further comprising:

a transceiver disposed within said plurality of smart probes, wherein said transceiver enables communication between said plurality of smart probes.

8. The monitoring system of claim 7 wherein said plurality of smart probes exchange one or more of:

select ones of said set of conditions; and a participation state of said plurality of smart probes.

9. The monitoring system of claim 1 further comprising:

a management computer disposed within said plurality of intermediate monitor sites.

10. The monitoring system of claim 9 wherein said management computer performs one or more of:

transmitting measurement requests to select ones of said plurality of smart probes responsive to one or more of:

- a capability of said select ones; and
- an availability of said select ones;

receiving said data from said plurality of smart probes; and

partially processing said data prior to communicating said partially processed data to said central processing server.

11. The monitoring system of claim 1 wherein said plurality of smart probes are wireless.

12. The monitoring system of claim 11 wherein said plurality of wireless smart probes are each located on a mobile platform.

13. A method for monitoring a measurement system comprising:
issuing an experiment from a central server to a plurality of intermediate monitoring stations;

transmitting said experiment to a plurality of smart probes;
determining at said plurality of smart probes a set of tasks for completing said experiment;
performing said set of tasks; and
transmitting data resulting from said performing step to said central server.

14. The method of claim 13 further comprising:
determining at said plurality of smart probes an availability to perform said set of tasks;
and

determining at said plurality of smart probes a capability of performing each of said set of tasks.

15. The method of claim 14 further comprising:
generating a random participation number at said plurality of smart probes;
comparing said random participation number to a participation threshold; and
determining a participation state of said plurality of smart probes responsive to said comparing.

16. The method of claim 15 wherein said participation threshold is weighted according to one or more of:

a number of said plurality of smart probes performing one or more of said set of tasks;
and

an importance attributable to said one or more of said set of tasks.

17. The method of claim 13 wherein said experiment relates to conditions existing in select portions of said measurement system.

18. The method of claim 17 wherein said transmitting step comprises:
ascertaining ones of said plurality of smart probes located within a predetermined
distance from said select portions of said measurement system; and
communicating said experiment to said ascertained ones of said plurality of smart probes.
19. The method of claim 18 wherein said ascertaining is performed by said plurality
of intermediate monitoring stations.
20. The method of claim 13 further comprising:
processing into said data, at said plurality of smart probes, measurements taken in said
performing said set of tasks.
21. The method of claim 13 further comprising:
processing into said data, at said plurality of intermediate monitoring stations,
information received from said plurality of smart probes.
22. The method of claim 13 further comprising:
exchanging information related to said experiment between said plurality of smart probes.
23. The method of claim 13 further comprising:
communicating between said plurality of smart probes to divide performance of selected
tasks of said set of tasks between selected smart probes of said plurality.
24. A system for managing a measurement system comprising:
means for transmitting an experiment from a central system to a plurality of intermediate
stations;
means for communicating said experiment to a plurality of smart probes;
means for determining at said plurality of smart probes a set of actions for completing
said experiment;
means for performing said set of actions; and
means for communicating data resulting from said means for performing to said central
station.
25. The system of claim 24 further comprising:
means for determining at said plurality of smart probes an availability to perform said set

of actions; and

means for determining at said plurality of smart probes an ability for performing each of said set of actions.

26. The system of claim 25 further comprising:

means for generating a random number at said plurality of smart probes;

means for comparing said random number to a participation number; and

means for determining a participation state of said plurality of smart probes responsive to said comparing.

27. The system of claim 26 wherein said participation number is weighted according to one or more of:

a number of said plurality of smart probes performing one or more of said set of actions; and

an importance attributable to said one or more of said set of actions.

28. The system of claim 24 wherein said experiment relates to conditions existing in select portions of said measurement system.

29. The system of claim 28 wherein said means for communicating said experiment comprises:

means for ascertaining ones of said plurality of smart probes disposed within a predetermined distance from said select portions of said measurement system; and

means for transmitting said experiment to said ascertained ones of said plurality of smart probes.

30. The system of claim 29 wherein said means for ascertaining is performed by said plurality of intermediate stations.

31. The system of claim 24 further comprising:

means for processing into said data, at said plurality of smart probes, measurements taken in said means for performing said set of actions.

32. The system of claim 24 further comprising:
means for processing into said data, at said plurality of intermediate stations, information received from said plurality of smart probes.
33. The system of claim 24 further comprising:
means for exchanging information related to said experiment between said plurality of smart probes.
34. The system of claim 24 further comprising:
means for communicating between said plurality of smart probes to divide performance of selected actions of said set of actions between selected smart probes of said plurality.